
Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of

Revision of Part 15 of the Commission's Rules)
Regarding Ultra-Wideband Transmission)
Systems)
)

ET Docket No. 98-153

To: The Commission

PETITION FOR RECONSIDERATION

J. R. CARBONELL
CAROL L. TACKER
DAVID G. RICHARDS
CINGULAR WIRELESS LLC
5565 Glenridge Connector
Suite 1700
Atlanta, GA 30342
(404) 236-5543

Its Attorneys

June 17, 2002

TABLE OF CONTENTS

SUMMARY	ii
SUMMARY	ii
BACKGROUND	1
DISCUSSION.....	10
I. IT WAS ARBITRARY AND CAPRICIOUS TO AUTHORIZE UWB DEPLOYMENT UNDER PART 15 WITHOUT AN ADEQUATE INTERFERENCE ANALYSIS	10
II. THE EMISSION LEVELS FOR INDOOR UWB DEVICES ARE ARBITRARY AND CAPRICIOUS.....	14
III. THE PART 15 AMENDMENTS CONSTITUTE LEGAL ERROR BECAUSE THE DEPLOYMENT OF UWB VIOLATES THE EXCLUSIVITY RIGHTS OF CELLULAR AND PCS LICENSEES	16
IV. THE NEW RULES UNDERMINE THE PUBLIC INTEREST BECAUSE UWB DEPLOYMENT WILL JEOPARDIZE E911 SYSTEMS.....	20
V. IN AUTHORIZING UWB IMAGING SYSTEMS, THE COMMISSION ARBITRARILY FAILED TO ADDRESS INTERFERENCE CONCERNS RAISED BY CINGULAR AND REQUIRED COORDINATION THAT PROTECTS ONLY GOVERNMENT SYSTEMS BUT PROVIDES NO PROTECTION TO NON-GOVERNMENT LICENSEES	21
CONCLUSION	24

SUMMARY

The Commission's authorization of UWB should be reconsidered because it was not based on an adequate analysis of the interference that would be posed to cellular and PCS. The Commission recognized its need to protect licensees from interference and said it intended to take a cautious approach, based on the signal levels actually used in operating systems. Nevertheless, the Commission rejected all of the evidence supplied by Qualcomm, CMRS licensees, and manufacturers concerning the operating levels that PCS systems are designed to use and actually do use. It even rejected a joint Sprint-TDC open-air test's determination of the minimum signal actually received by a CDMA PCS system.

The Commission then proceeded to rely on a Staff Report that declared all the evidence of real-world conditions to be "unreasonable," based on a misunderstanding of the CDMA technology used in the CMRS system tested. Instead, the staff hypothesized what real-world minimum signal strengths would be if they were based on the maximum signal permitted at a PCS boundary — even though there was no evidence that this had any resemblance to real-world conditions. As a result, there is no rational connection between the Commission's decision to employ actual operating conditions in its interference analysis and its conclusion that there would be no interference. This constituted result-oriented rationalization, not reasoned decisionmaking.

The Commission's decision to permit certain UWB devices to operate only indoors was flawed because it assumed that building attenuation would provide additional protection to services such as PCS. This disregards the fact that these UWB devices will interfere with PCS and cellular handsets that are themselves indoors and also subject to building attenuation. The Commission should subject these UWB devices to a considerably reduced emission limit in the cellular and PCS bands, because their use indoors will be even more injurious to the weak cellular and PCS signals indoors than outdoor usage would cause to the more robust cellular and PCS transmissions outdoors.

Moreover, the Commission's implementation of its "indoor" UWB rule is flawed, because it effectively allows any unit with an AC power cord to be considered an indoor unit. There is no correlation between the fact that a unit requires AC power and its usage only indoors. AC power can be obtained anywhere, inside or out, due to the availability of portable generators and long extension cords. Corded "indoor" networking devices may and will, therefore, be used outdoors as well as indoors.

The Commission's *Order* arbitrarily scuttled its long-standing, uncontested policy, as expressed in its rules and numerous decisions, that cellular and PCS licensees have the exclusive right to use their assigned spectrum within their service areas. Only two weeks after arbitrarily deviating from its preexisting policy of cellular and PCS exclusivity in the *Order*, the Commission reverted to its prior policy in its *Nextwave* brief, where it told the Supreme Court that "the FCC must protect [the PCS licensee's] exclusive right to the spectrum and refrain from authorizing others to use that spectrum."

The Commission's only explanation for its rejection of cellular and PCS exclusivity is that these licensees already had to coexist with Part 15, so they had a very limited form of exclusivity. The existing Part 15 rules, however, barred UWB, and there was little if any Part 15 usage of cellular and PCS spectrum. The record did not reflect that Part 15 was a significant

limit on licensee exclusivity. The Commission's decision to allow thousands or millions of uncontrolled, unregistered, unlicensed, and uncoordinated UWB devices to use the cellular and PCS bands, from which they were previously barred, was therefore a major incursion into the previously existing level of licensee exclusivity. Accordingly, the Commission's rejection of such exclusivity was arbitrary and capricious.

A major public policy reason why UWB devices should not be authorized until testing definitively establishes noninterference with cellular and PCS operations is reliance on those services for critical E911 service. CMRS carriers generally utilize two types of technologies for providing E911 services: assisted GPS ("A-GPS") or a technology that determines location based on signal strengths received either by base stations or handsets. The Part 15 amendments adopted by the Commission jeopardize both types of technologies. Given the importance the Commission has placed on E911, subverting this service through UWB is contrary to the public interest.

Finally, the Commission's decision to authorize UWB imaging systems should be reconsidered. The Commission failed to address specific concerns about the interference potential of these devices to CMRS. It also subjected imaging systems to a coordination process that provides protection only to government systems and provides no protection to non-government licensees. As a result, it will be impossible for cellular and PCS operators to track interference to its source, should it occur. There is no discussion in the *Order* explaining the rationale for this arbitrary refusal to afford non-government licensees the tools needed to remedy, much less prevent, interference.

Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of)
)
Revision of Part 15 of the Commission's Rules) ET Docket No. 98-153
Regarding Ultra-Wideband Transmission)
Systems)
)

To: The Commission

PETITION FOR RECONSIDERATION

Cingular Wireless LLC (“Cingular”), on behalf of its subsidiaries and affiliates, hereby requests reconsideration of the *First Report and Order* (“*Order*”) in the above-captioned proceeding.¹ As discussed more fully below, the *Order* should be reconsidered because it authorizes the widespread deployment of ultra-wideband (“UWB”) devices pursuant to Part 15 of the Commission’s rules without adequately protecting the rights of licensed providers of commercial mobile radio services (“CMRS”), such as Cellular Radiotelephone Service (“cellular”) and the Personal Communications Service (“PCS”).

BACKGROUND

The FCC was originally created to eliminate interference between transmitters and bring order to the use of radio spectrum within the United States. Section 301 of the Communications Act of 1934 states that: “It is the purpose of this Act . . . to maintain the control of the United States over all the channels of radio transmission.”² To accomplish this goal, Congress empowered the FCC to “[m]ake such regulations not inconsistent with law as it may deem necessary to

¹ *Revision of Part 15 of the Commission’s Rules Regarding Ultra-Wideband Transmission Systems*, ET Docket 98-153, *First Report and Order*, FCC 02-48 (April 2, 2002).

² *See* 47 U.S.C. § 301.

prevent interference between stations.”³ These provisions were originally enacted as part of the Radio Act of 1927 because, among other things:

From July 1926, to February 23, 1927, when Congress enacted the Radio Act of 1927 almost 200 new radio stations went on the air. These new stations used any frequency they desired, regardless of the interference thereby caused to others. Existing stations changed to other frequencies and increased their power and hours of operation at will. The result was confusion and chaos. With everybody on the air, nobody could be heard.⁴

In urging Congress to adopt these statutory provisions, the President stated that “the whole service of this most important public function has drifted into such chaos as seems likely, if not remedied, to destroy its great value.”⁵ The Supreme Court has confirmed that regulation of interference is a most critical function:

Regulation of radio was therefore as vital to its development as traffic control was to the development of the automobile. In enacting the Radio Act of 1927, the first comprehensive scheme of control over radio communication, Congress acted upon the knowledge that if the potentialities of radio were not to be wasted, regulation was essential.⁶

Consistent with its mandate to prevent interference, the Commission has granted cellular and PCS licensees exclusive rights to use their spectrum. In the case of cellular, Section 22.905 of the Commission’s rules provides: “Each channel block is assigned *exclusively* to one licensee

³ See 47 U.S.C. § 303(f).

⁴ FCC Office of Network Study, Second Interim Report on Television Network Procurement, 65-66 (1965); see *National Broadcasting Co. v. U.S.*, 319 U.S. 190, 212 (1943) (*NBC*) (“With everybody on the air, nobody could be heard.”).

⁵ H. Doc. 483, 69th Cong., 2d Sess., p.10. These sentiments were echoed by a sponsor of the Radio Act: “We have reached the definite conclusion that the right of all our people to enjoy this means of communications can be preserved only by the repudiation of the idea underlying the [Radio Act of 1912] that anyone who [desires] may transmit.” *Red Lion Broadcasting Co. v. FCC*, 395 U.S. 367, 376 n.5 (citing Statement of Rep. White, 67 Cong. Rec. 5479).

⁶ *NBC*, 319 U.S. at 213.

for use in that licensee's cellular geographic service area,"⁷ and Section 22.911 states that the cellular geographic service area "is the area within which cellular systems are entitled to protection."⁸ This right to exclusivity was extended to PCS upon its creation,⁹ and the Commission has repeatedly held that PCS licensees have the same exclusivity as cellular licensees,¹⁰ namely, "an exclusive right to use a designated portion of the electromagnetic spectrum for the term of the license."¹¹

Part 15 of the Commission's rules creates a limited exception to the exclusivity granted to licensed service providers, such as cellular and PCS operators. The Part 15 rules permit the operation on a secondary basis of unlicensed, low-powered transmitters on frequencies licensed to other parties, *provided the unlicensed transmitters create no harmful interference*.¹² To ensure that licensed operations are protected from interference, strict emission measurement procedures

⁷ 47 C.F.R. § 22.905(a).

⁸ 47 C.F.R. § 22.911(a).

⁹ *New Personal Communications Services*, GN Docket 90-314, *Memorandum Opinion and Order*, 9 F.C.C.R. 7805, 7809 (1994) ("one license per spectrum block per service area.").

¹⁰ *See Regulatory Treatment of Mobile Services*, GN Docket 93-252, *Third Report and Order*, 9 F.C.C.R. 7988, 8042 (1994) (one of the four elements upon which the Commission's "licensing rules for PCS and cellular are based" is the "assignment of contiguous spectrum blocks to a single license on an exclusive basis") (emphasis added); *Regulatory Treatment of Mobile Services*, GN Docket 93-253, *Further Notice of Proposed Rulemaking*, 9 F.C.C.R. 2863, 2877 (1994) (both PCS and cellular are "services where licensees have exclusive channel assignments over large service areas"); *Competitive Bidding 800 MHz SMR*, PR Docket 93-144, *Further Notice of Proposed Rulemaking*, 10 F.C.C.R. 7970, 7995 (1994) ("a licensee has exclusive use of a block of contiguous channels . . . in cellular or PCS").

¹¹ *Public Utility Commission of Texas*, 13 F.C.C.R. 3460, 3503 (1997); *accord 1998 Biennial Review — Spectrum Aggregation Limits*, WT Docket 98-205, *Notice of Proposed Rulemaking*, 13 F.C.C.R. 25,312, 25,142-25,143 (1998) ("SMR spectrum is not available in a contiguous block on an exclusive use basis like broadband PCS and cellular spectrum"). The D.C. Circuit has accepted the exclusivity of CMRS licenses as FCC policy. *See also BellSouth Corp. v. FCC*, 162 F.3d 1215, 1223 (D.C. Cir. 1999) ("CMRS spectrum is . . . exclusive in that whatever one entity holds cannot be held by another.").

¹² 47 C.F.R. § 15.5(b).

have been applied to Part 15 devices.¹³ Moreover, if a Part 15 device causes harmful interference to a licensed service, operation of the device must cease until the interference is corrected.¹⁴

Part 15 placed significant restrictions on unlicensed spectrum use. For the most part, Part 15 intentional radiators were required to use narrowband emissions subject to significant power limits. As a result, the Commission acknowledged, “most UWB devices cannot operate under current [Part 15] regulations.”¹⁵ In the fall of 1998, the Commission commenced a proceeding to determine whether Part 15 should be amended to permit the unlicensed operation of UWB devices.¹⁶ The Commission proposed modifying Part 15 to permit UWB operations provided “that any new rule provisions for UWB devices . . . ensure that radio services are protected against interference.”¹⁷ The Commission recognized that any benefits associated with UWB “could be outweighed if UWB devices were to cause interference to licensed services.”¹⁸

The Commission received numerous comments from virtually all sectors of the telecommunications industry opposing the blanket authorization of UWB devices under Part 15.¹⁹ Cingular and others urged the Commission to refrain from authorizing UWB until detailed test-

¹³ See *Order* at ¶ 6.

¹⁴ 47 C.F.R. § 15.5(c).

¹⁵ *Revision of Part 15 of the Commission’s Rules Regarding Ultra-Wideband Transmission Systems*, ET Docket 98-153, *Notice of Proposed Rulemaking*, 15 F.C.C.R. 12,086, 12,089 (2000) (*NPRM*).

¹⁶ *Revision of Part 15 of the Commission’s Rules Regarding Ultra-Wideband Transmission Systems*, ET Docket No. 98-153, *Notice of Inquiry*, 13 F.C.C.R. 16376 (1998).

¹⁷ *NPRM* at 12,089 (emphasis added).

¹⁸ *Order*, ¶¶ 4, 18.

¹⁹ See AARL/National Association for Amateur Radio Comments at 5 (Apr. 25, 2001); Aeronautical Radio, Inc./Air Transport Association of America, Inc. Comments at 3-4 (Apr. 25, 2001); Boeing Corporation Supplemental Comments at 1-2 (Apr. 23, 2001); Conexant Systems Inc. Comments at 2 (Apr. 25, 2001); Lockheed Martin Corporation Comments at 5 (Apr. 25, 2001); Motorola, Inc. Comments at 1-10 (Apr. 25, 2001); Nokia Inc. Comments at 1-2 (Apr. 25, 2001); Sirius Satellite Radio Inc. Comments at i, 15-16 (Apr. 25, 2001); Sprint Corporation Comments at 5-7 (Apr. 25, 2001); U.S. GPS Industry Council Comments at 1-2, 9-10 (Apr. 25, 2001).

ing was completed that concretely demonstrated that the deployment of such devices could not cause harmful interference.²⁰

With respect to PCS, tests and mathematical analyses were submitted by Motorola, Telcordia Technologies (with Sprint and TDC), and Qualcomm. These tests established that the proposed amendments to Part 15 to permit UWB deployment would cause harmful interference to licensed PCS operations.²¹ In particular, this information demonstrated that:

- a PCS handset would receive harmful interference from any device that causes a 1 dB rise in the receiver thermal noise floor;²² and
- UWB emissions at 12 dB below the Part 15 limits (*i.e.*, the level the Commission proposed and ultimately adopted) would cause interference to CDMA PCS systems.²³

Based on its analysis, Motorola demonstrated that the maximum UWB emission level should be at least 16-24 dB, and as much as 27-35 dB, below current Part 15 levels.²⁴

The most extensive testing involving PCS was jointly performed by Sprint, TDC, and Telcordia. They submitted both a theoretical model²⁵ and operational tests,²⁶ including anechoic

²⁰ See, e.g., Alloy LLC Reply Comments at i, 3-6 (Oct. 27, 2000) (Cingular was formerly known as Alloy LLC); Motorola Reply Comments at 8-10 (Oct. 27, 2000).

²¹ Motorola Comments (Sept. 12, 2000); Dr. Jay Padgett, Senior Research Scientist, Telcordia Technologies, “A Model for Calculating the Effect of UWB Interference on a CDMA PCS System” and “Summary of Testing Performed by Sprint PCS and Time Domain to Characterize the Effect of Ultra Wideband (UWB) Devices on an IS-95 PCS System” (Sept. 12, 2000), *appended as* Attachments 1 and 2 to letters filed September 12, 2000, by Sprint PCS and TDC; Qualcomm Report (Mar. 5, 2001).

²² Motorola Comments at 10 (Sept. 12, 2000); Qualcomm Report at 7 (Mar. 5, 2001); *accord Order* at ¶¶ 153, 161.

²³ *Order*, ¶¶ 155-56.

²⁴ Motorola Ex Parte at 3 (Feb. 1, 2002).

²⁵ See Dr. Jay Padgett, Senior Research Scientist, Telcordia Technologies, “A Model for Calculating the Effect of UWB Interference on a CDMA PCS System” (Sept. 12, 2000), *appended as* Attachment 1 to letters filed September 12, 2000, by Sprint PCS and TDC.

²⁶ See Dr. Jay Padgett, Senior Research Scientist, Telcordia Technologies, “Summary of Testing Performed by Sprint PCS and Time Domain to Characterize the Effect of Ultra Wideband (UWB)

(continued on next page)

chamber tests and open-field real-world tests. The report on the real-world operational component of this test notes that tests were performed at high, moderate, and low received CDMA signal levels, but that some data had been lost and only the moderate received signal level test provided enough information for analysis. In the moderate level test, the total power level received by the handset was -92 to -96 dBm. Because that includes overhead channels as well as traffic channels, “the received traffic channel power was in the range of -106 to -115 dBm most of the time” and “the received [traffic channel] signal could be as low as about 13 dB below the [-105 dBm] noise floor, or about -118 dBm.”²⁷ In the test, when a UWB device was brought within one foot of the CDMA handset receiving a traffic channel at -99 to -103 dBm — considerably stronger than the typical moderate-level signal — the base station power automatically increased to overcome interference and the call was dropped. The test was with an unloaded system; the report noted that if the system had been loaded, a call as strong as -85 to -89 dBm would be dropped under the same conditions.²⁸

Sprint’s supplemental comments addressing this test showed that the cell capacity loss that would be caused by the power increase due to UWB devices would be at least as significant in terms of interference as the direct interference (call drop) to the CDMA unit approached by the UWB device.²⁹ Sprint also made clear that at the signal levels proposed (and adopted) by the FCC, under some conditions, a UWB device could cause blocked calls to handsets within three

(continued)

Devices on an IS-95 PCS System” (Sept. 12, 2000), *appended as* Attachment 2 to letters filed September 12, 2000, by Sprint PCS and TDC.

²⁷ *Id.* at 4. (The -105 dBm thermal noise floor is based on CDMA’s 1.25 MHz bandwidth and a noise figure of 8 dB for the mobile receiver.)

²⁸ *Id.*

²⁹ Sprint Supplemental Comments at 4-5 (Oct. 2, 2000).

meters at a rate of 1.2 to 4.8%, and to handsets within two meters at a rate of 2.0 to 7.9%.³⁰ Sprint also demonstrated that a single UWB device would raise the noise floor by nearly 4 dB at a distance of two meters from a PCS handset and by 1.3 dB at four meters.³¹ Sprint concluded that the Commission's proposed UWB emission threshold was insufficient to prevent harmful interference.³²

Other commenters generally noted that the tests to date indicated that UWB would cause interference to licensed cellular and PCS operations, as well as GPS receivers.³³ Subsequently, Sprint demonstrated that the potential adverse effect of UWB on PCS operations violated its exclusive right to use the PCS spectrum it obtained at auction and, therefore, constituted a breach of its auction contract.³⁴ Commenters further noted that UWB devices would interfere with the provision of enhanced 911 ("E911") location information.³⁵

No other tests of the relationship between UWB devices and PCS systems were submitted.³⁶ UWB advocates submitted no tests concerning cellular or PCS technologies other than

³⁰ *Id.* at 5.

³¹ *Id.* at 5-6.

³² *Id.* at 6.

³³ See Cingular Wireless LLC, Qualcomm, and Verizon Wireless Ex Parte at 1-2 (filed May 24, 2002); Sprint PCS Ex Parte at 1, 4-6 (Jan. 30, 2002); Qualcomm Report (Jan. 12, 2002); Qualcomm Report (Mar. 5, 2001);

³⁴ Sprint PCS Ex Parte (Jan. 30, 2002); Sprint PCS Ex Parte (Feb. 21, 2001); Sprint Comments at 8 (Apr. 25, 2001); Sprint Reply Comments at 13-14 (May 10, 2001); Sprint PCS Comments at 2 (Apr. 6, 2001).

³⁵ Cingular Wireless LLC Reply Comments at 3-4 (May 10, 2001); Sprint PCS Ex Parte at 8 (Jan. 30, 2002); Qualcomm Ex Parte at 15 (Jan. 11, 2002).

³⁶ In particular, Cingular is concerned that the Commission has authorized UWB devices without detailed tests regarding potential interference between UWB and cellular systems. Similarly, the Commission has failed to establish that the authorization of UWB will not interfere with PCS systems that utilize GSM or TDMA technologies. The Commission is well aware of the operating parameters of GSM and TDMA systems, which are subject to established standards. In addition, numerous commenters raised issues concerning UWB's effect on these CMRS technologies, as well as 3G technologies, such as

(continued on next page)

CDMA, such as analog cellular, TDMA, or GSM, much less 3G technologies. Sprint noted that 3G technologies were likely to be even more susceptible to UWB interference.³⁷

TDC and XSI, both UWB proponents, challenged the test results. These parties generally objected to the theoretical model used in the Telcordia tests (even though TDC had, with Sprint, joined in its development and submission to the Commission) and stated that “real world open field testing” more accurately reflects the potential for UWB/PCS interference.³⁸ TDC and XSI claimed that these tests established that the new Part 15 rules would permit UWB devices to operate within 1 meter of a PCS handset without causing interference.

The Commission reviewed these materials and observed that it “should be cautious until [it has] gained further experience with this technology.”³⁹ The Commission then proceeded to adopt its proposed revisions to Part 15 and dismissed the test results that demonstrated the revised rules would result in UWB devices interfering with licensed operations.⁴⁰ Rather than rely on the theoretical models and mathematical analyses, the Commission opted to rely on the analysis of the Sprint/TDC/Telcordia outdoor tests provided by TDC and XSI even though it acknowledged that much of the testing data had been lost,⁴¹ so it included only medium-strength PCS signal tests.

The Commission also relied on an FCC Staff Report that concluded that “[a]n interference analysis for a communications system needs to be based on a signal to noise ratio

(continued)

W-CDMA. *See, e.g.*, Letter filed April 25, 2001 by Nokia Inc., at 2; Reply Comments of Cingular Wireless LLC Regarding UWB Test Reports at 1-3, 5 (May 10, 2001).

³⁷ Sprint Supplemental Comments at 13-14 (Oct. 2, 2000).

³⁸ *Order* at ¶¶ 157-58.

³⁹ *Order* at ¶ 21.

⁴⁰ *See Order* at ¶¶ 12-21, 152-163.

⁴¹ *See Order* at ¶¶ 155, 157.

using the *signal levels actually employed by that system.*”⁴² This report, however, rejected an analysis by Qualcomm (which is the principal technology expert on CDMA) based on PCS systems operating at received signal levels of -105 dBm; likewise, the Commission rejected evidence from Sprint that its PCS systems operate at the -105 dBm thermal noise floor. In both cases, the staff viewed the contention that CDMA systems would be able to receive signals at the thermal noise floor as “unreasonable,” and it concluded that a -96 dBm level was more realistic, even though it said that the “minimum signal level that is expected to be received by a PCS handset is unknown” and acknowledged that the FCC did “not have any data regarding the actual signal levels employed in PCS systems.”⁴³

Rather than rely on the statements of the leading CDMA PCS developer, a PCS licensee regarding the design of its system, or actual test data (which showed that received traffic signal strength could be as low as -118 dBm), the report arrived at its -96 dBm level on the assumption that PCS handsets were designed to operate with received signal strengths no lower than the 47 dBµV/m limit established by the FCC for median field strength at a market boundary.⁴⁴ There was no evidence that PCS handsets are so designed.

In addition to dismissing tests demonstrating the likelihood of interference from UWB devices, the Commission rejected its long-held policy that cellular and PCS licensees were entitled to the exclusive use of their frequencies.⁴⁵

⁴² *Order* at ¶ 160; FCC Staff Report, “Potential Interference to PCS from UWB Transmitters Based on Analyses by Qualcomm Incorporated,” at 4 (dated Feb. 14, 2002, filed May 3, 2002) (“Staff Report”).

⁴³ Staff Report at 6.

⁴⁴ *Id.*

⁴⁵ *Order* at ¶ 271 (footnote omitted).

Cingular has timely filed this Petition for Reconsideration pursuant to Section 405 of the Communications Act and Section 1.106 of the Commission's rules.⁴⁶

DISCUSSION

I. IT WAS ARBITRARY AND CAPRICIOUS TO AUTHORIZE UWB DEPLOYMENT UNDER PART 15 WITHOUT AN ADEQUATE INTERFERENCE ANALYSIS

Under the Administrative Procedure Act, courts must “‘hold unlawful and set aside agency action’ that is ‘arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.’”⁴⁷ To avoid invalidation pursuant to this standard, agency decisions must be:

based on a consideration of the relevant factors, . . . and rest on reasoned decisionmaking in which the agency must examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made.⁴⁸

The *Order* violates these principles and constitutes unreasoned decisionmaking. The Commission recognized that any changes to Part 15 must continue to insulate FCC licensees from harmful interference and that, given the importance of this non-interference condition, it “‘should be cautious until [it has] gained further experience with this technology.’”⁴⁹ The Commission also relied on a Staff Report which stated that any “‘interference analysis for a communications system needs to be based on a signal to noise ratio using the signal levels actually employed by that system.’”⁵⁰

⁴⁶ See 47 U.S.C. § 405; 47 C.F.R. § 1.106.

⁴⁷ *BellSouth Corp. v. FCC*, 162 F.3d 1215, 1221 (D.C. Cir. 1999) (quoting 5 U.S.C. § 706(2)(A)).

⁴⁸ *United States Telecom Association v. FCC*, 227 F.3d 450, 461 (D.C. Cir. 2000) (citing *Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402, 416 (1971); *Motor Vehicle Manufacturers Association v. State Farm Mutual Automobile Insurance Co.*, 463 U.S. 29, 43 (1983)); see also *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168 (1962).

⁴⁹ *Order* at ¶ 21.

⁵⁰ Staff Report at 4.

Tests and analyses were submitted by a major CDMA PCS developer, FCC licensees and equipment manufacturers demonstrating that the deployment of UWB devices pursuant to the proposed rules would cause harmful interference to incumbent licensees. Qualcomm and Sprint even provided information regarding the received signal levels used by CDMA PCS systems, both as designed and in the real world.⁵¹ The open-air test included evidence of the minimum received signal level required and of the typical medium-strength signal received. This information was consistent with Motorola's analysis.⁵²

Despite stating that it must take the "cautious" approach with respect to authorizing UWB, the Commission dismissed all of this evidence. Instead of relying on data from Sprint regarding the actual operating parameters of its PCS system, or Qualcomm regarding the signal strength for which a PCS system is designed, or even the minimum or typical received signal strength from the real-world test on which it otherwise relied, the Commission relied on a staff analysis that summarily dismissed the claim that CDMA PCS systems routinely receive signals at the -105 dBm noise floor (or even below) as "unreasonable" because that would "provide no margin for fading or from noise from other sources."⁵³ This faulty analysis indicates a lack of understanding of CDMA technology, which permits traffic channels to be received at or below

⁵¹ Sprint PCS Comments, Attachment 2 (Sept. 12, 2000).

⁵² *Order* at ¶153-54.

⁵³ Staff Report at 4, 6. Ironically, this information was very similar to the analysis provided by Motorola and rejected for a slightly different, and inconsistent, reason. In rejecting Motorola's analysis of PCS signal levels, the Commission acknowledged that the levels used by Motorola would be sufficient to provide service at the fringe of a service area. *Order* at ¶154. The Commission then rejected the use of these signal levels, in essence, because it was not the typical signal level. *Id.* Regardless of whether this signal level was typical, it is used by many PCS carriers to complete calls in so-called fringe areas and Part 15 devices – including UWB devices – are prohibited from interfering with such calls. Accordingly, it was arbitrary and capricious for the FCC to disregard Motorola's analysis.

the noise floor as part of a composite signal that exceeds the noise floor by a considerable margin, using a rake receiver.

The Staff Report correctly stated that “an interference analysis for a communications system needs to be based on a signal to noise ratio using the signal levels actually employed by the system.”⁵⁴ Nevertheless, the Staff claimed not to know the “minimum signal level that is expected to be received by a PCS handset” and that “we do not have any data regarding the actual signal levels employed in PCS systems.”⁵⁵ In fact, the Staff Report, like the Commission, rejected substantial evidence of the signal levels used by CDMA PCS systems. There is no indication that the staff considered the signal levels used by TDMA or GSM PCS systems.

The rejection of this information constitutes arbitrary and capricious decisionmaking. *At best*, the Commission rejected its own determination that its decision had to be based on actual conditions.⁵⁶ The FCC’s consideration of the tests and analyses submitted by the commenters was premised on the need for information regarding actual operating parameters. This information was then rejected in favor of the Commission’s speculation as to what reasonable operating levels might be. There is no rational connection between the Commission’s determination that actual operating levels must be used in an interference analysis and the Commission’s use of an interference level premised on *theoretical* operating conditions that are contrary to the evidence of *actual* operating conditions.

⁵⁴ Staff Report at 4.

⁵⁵ Staff Report at 4; *see also Order* at ¶ 75 (“we have an inadequate record at this time for basing standards on such [real-world] measurements”).

⁵⁶ The Commission’s claim that its decision was based on actual operating conditions also contrasts with its statement that controlled environment tests (*i.e.*, anechoic chamber tests) were more appropriate than free-space, real-world tests, in paragraph 75 of the *Order*.

Moreover, the Commission's assumption regarding what constitutes a theoretical "reasonable" PCS operating level is wrong. It assumed that, because the PCS rules state that signal strength at the border of a market must not exceed 47 dBuV/m, all PCS systems, including the CDMA systems that were analyzed, could be engineered to only "operate at this signal level or higher."⁵⁷ The Commission's *Order* and the Staff Report contain no substantiation that CDMA systems are designed so that handsets will reliably receive only signals at or above the -96 dBm level that is the maximum permissible at a system boundary, based on the 47 dBuV/m boundary level rule. All of the evidence indicates, in fact, that CDMA systems are designed to, and actually do, operate with land-to-mobile traffic channels being received at signal strengths at or below the thermal noise floor of -105 dBm.

Moreover, the staff's assumption regarding signal levels, even if true in a fully mature system, disregards the reality of actual PCS operating conditions. The vast majority of PCS markets are not fully built-out. Carriers have concentrated coverage along highways and major cities. As a result, the signal level at the system boundary with an adjacent system will typically be much lower than 47 dBuV/m, and customers will receive service at a level below that figure well inside the system boundary even if that were the optimal design figure (which it is not, in a CDMA system, the only type addressed). The record does not reflect that any PCS carrier has designed a system that only completes calls where there is a signal strength at 47 dBuV/m or greater as the Commission presumed.

⁵⁷ Staff Report at 6.

The *Order* appears to be the “product of ‘result-oriented’ rationalization,” rather than the product of reasoned decision-making.⁵⁸ The Commission apparently was determined to authorize UWB regardless of the evidence presented. Even though the Commission purported to reach a decision based on real-world operating conditions, it arbitrarily rejected all evidence of how PCS systems really operate as “unreasonable” because it did not fit with the FCC’s limited understanding of PCS technology and substituted purely hypothetical figures with no connection to the real world. Accordingly, the interference analysis needs to be rejected and a different conclusion reached, based on the record.

II. THE EMISSION LEVELS FOR INDOOR UWB DEVICES ARE ARBITRARY AND CAPRICIOUS

The Commission’s determination that certain UWB devices should be permitted to operate only indoors is fatally flawed.⁵⁹ This determination is premised on the attenuation provided by a building effectively reducing the emissions of a UWB device outside the building.⁶⁰ Although it is true that buildings provide attenuation of UWB signals being received outside, this completely disregards the fact that UWB devices may interfere with PCS and cellular handsets within the same building. The building provides no attenuation with respect to the handset’s reception of the interfering signal, which is stronger than would be permitted outdoors. Further, the desired signal from the base station, with which the device is potentially interfering, is itself attenuated by the building.

⁵⁸ See *Continental Airlines v. CAB*, 519 F.2d 944, 957 (D.C. Cir. 1975) (noting that a decision that ignores contradictory evidence “triggers scrutiny” to ensure that the decision was not “based on impermissible or irrelevant factors” or “a product of ‘result oriented’ rationalization”).

⁵⁹ *Order* at ¶¶ 66, 86-91, 145, n.280, 190.

⁶⁰ See *id.*

The Commission has previously recognized the difficulties associated with providing reliable cellular and PCS service within buildings, yet has now adopted rules that would create additional interference.⁶¹ As stated above, Part 15 devices are prohibited from interfering with licensed operations. Accordingly, assuming that the Commission does not reverse its decision regarding UWB deployment altogether, it should reverse its conclusion with respect to in-building operation of these devices. Having decided that these devices should not be permitted out-of-doors because of their interference potential, they should be subject to even *lower* emission limits when operated indoors, where cellular and PCS units are most sensitive to interference. The reliance on structural shielding for indoor operations that would be prohibited out-of-doors is unreasonable.

In addition, even if the Commission's decision to allow certain indoor UWB devices were somehow justified, its implementation is flawed. The Commission allows designation of a device as being limited to indoor operation if it requires AC power.⁶² The fact that a unit has a power cord is very unlikely to prevent its use outdoors. With the proliferation of low-cost portable generators (and 100-foot "outdoor" extension cords), AC power is available everywhere. Thus, networking devices may — and will — be used ubiquitously, even where the

⁶¹ See *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, CC Docket 94-102, *Report and Order*, 11 F.C.C.R. 18,676, 18,712 (1996); *Notice of Proposed Rulemaking*, 9 F.C.C.R. 6170, 6178 (1994).

⁶² See *Order* at ¶ 65 ("One acceptable procedure may be to show that the transmitting unit requires AC power to function."); 47 C.F.R. § 15.517(a)(1), as adopted in the *Order* ("Indoor UWB devices, by the nature of their design, must be capable of operation only indoors. The necessity to operate with a fixed indoor infrastructure, *e.g.*, a transmitter that must be connected to the AC power lines, may be considered sufficient to demonstrate this.").

shielding of a building is not present. Accordingly, there is no correlation between an AC power cord and indoor-only operation.⁶³

III. THE PART 15 AMENDMENTS CONSTITUTE LEGAL ERROR BECAUSE THE DEPLOYMENT OF UWB VIOLATES THE EXCLUSIVITY RIGHTS OF CELLULAR AND PCS LICENSEES

The Commission's rules grant cellular and PCS licensees the exclusive use of their assigned spectrum within designated geographic areas. Cellular licensees' exclusive rights are guaranteed by rule,⁶⁴ and the Commission has repeatedly described a PCS licensee as having the same kind of exclusive use of its frequency band within its service area. In 1994, the Commission stated that there would be "one [PCS] license per spectrum block per service area."⁶⁵ That same year, the Commission said that both PCS and cellular were "services where licensees have *exclusive* channel assignments over large service areas," noting that one of the four elements upon which its "licensing rules for PCS and cellular are based" is the "assignment of contiguous spectrum blocks to a single license on an *exclusive* basis."⁶⁶ It reiterated this exclusivity policy in 1997: "The Commission's grant of a PCS license confers on the licensee an exclusive right to use a designated portion of the electromagnetic spectrum for the term of the license."⁶⁷ Indeed, it was on this very basis that the Commission offered PCS licenses at auction and that winning bidders agreed to pay for their licenses.

⁶³ The fact that the rules require a legend in the instruction manual requiring operation to be indoors only (*see* 47 C.F.R. § 15.517(g), as adopted in the *Order*) is unlikely to be any more effective than similar warnings in many instruction manuals against using extension cords, cleaning with household cleaners, and placing equipment in direct sunlight.

⁶⁴ *See* 47 C.F.R. § 22.905(a).

⁶⁵ *New Personal Communications Services, Memorandum Opinion and Order*, 9 F.C.C.R. at 7809.

⁶⁶ *Regulatory Treatment of Mobile Services, Third Report and Order*, 9 F.C.C.R. at 8042 (emphasis added); *id.*, *Further Notice of Proposed Rulemaking*, 9 F.C.C.R. at 2877; *accord Competitive Bidding 800 MHz SMR*, PR Docket 93-144, *Further Notice of Proposed Rulemaking*, 10 F.C.C.R. 7970, ¶ 42 (1994) ("a licensee has exclusive use of a block of contiguous channels . . . in cellular or PCS").

⁶⁷ *Public Utility Commission of Texas*, 13 F.C.C.R. at 3503.

In this proceeding, however, the Commission scuttled its long-standing, uncontested policy that cellular and PCS licensees were entitled to the exclusive use of their frequencies without even acknowledging that to be its policy. According to the Commission:

This spectrum is not, and has never been, exclusive to Sprint or to any other licensee or user. While Sprint PCS has been provided some exclusivity in operating licensed PCS systems within specified geographic areas, Part 15 transmitters currently are permitted to operate within the PCS and cellular frequency bands at considerably higher emission levels than those being adopted in this Report and Order.[] In addition, there are countless other devices that emit radio emissions within these bands. In any event, we have not in this proceeding permitted any UWB devices to deliberately emit in the PCS bands. Much as we have done for other RF devices, we have simply established limits on out-of-band and spurious emissions from UWB devices that are designed to reduce the probability that harmful interference would be caused.⁶⁸

Two weeks after the *Order* was released, however, the Commission was back to its long-held position that PCS licenses were exclusive. In a brief filed with the United States Supreme Court, the Commission stated:

Under FCC licenses, performances are owed by both the licensee and the FCC. While [a PCS licensee] must obey FCC rules and make the required payments, *the FCC must protect [the PCS licensee's] exclusive right to the spectrum and refrain from authorizing others to use that spectrum.*⁶⁹

Although an agency may change rules and policy, it must acknowledge the change and supply a reasoned basis for doing so.⁷⁰ The *Order* fails to satisfy this standard. The Commission

⁶⁸ *Order* at ¶ 271 (footnote omitted).

⁶⁹ FCC Brief, *FCC v. NextWave*, Case No. 01-653, at n.10 (U.S., filed May 6, 2002) (emphasis added).

⁷⁰ See *Greater Boston Television Corp. v. FCC*, 444 F.2d 841, 852 (1970), *cert. denied*, 403 U.S. 923 (1971).

takes the position that it is not changing its exclusivity policy, because no such policy existed.⁷¹ That cannot be squared with the Commission's repeated, consistent statements to the contrary.

To support its argument that the authorization of UWB devices on cellular and PCS frequencies is consistent with its rules and not in derogation of licensee exclusivity, the Commission states: "Part 15 transmitters currently are permitted to operate within the PCS and cellular frequency bands at considerably higher emission levels than those being adopted in this Report and Order."⁷² The existence of Part 15 does not support the deployment of UWB devices producing emissions on cellular and PCS frequencies, however, because these rules prohibited all broadband (and hence ultra-wideband) operations.⁷³ Only narrowband operations were permitted. Moreover, under the old rules, damped-wave emissions (which are characteristic of UWB) were completely barred, but the rules have now been amended to permit damped-wave UWB operations under Part 15.⁷⁴ The record does not reflect the extent to which Part 15 devices are currently operating in the cellular or PCS bands, but Cingular is unaware of any significant Part 15 applications in these bands or any mass-marketed intentional radiators.

The Commission has failed to explain how the existence of Part 15 rules prohibiting UWB operations provides a legal justification for determining that cellular and PCS licenses are not exclusive. Moreover, there is no record of significant actual non-UWB Part 15 usage of the cellular and PCS bands.

⁷¹ *Order* at ¶ 271.

⁷² *Id.*

⁷³ *See Order* at ¶ 8; *NPRM* at 12,089.

⁷⁴ *See* 47 CFR 15.521(i) ("The prohibition in Sections 2.201(f) and 15.5(d) of this chapter against Class B (damped wave) emissions does not apply to UWB devices operating under this subpart.")

The Commission has amended the Part 15 Rules to permit thousands or millions of uncontrolled, unregistered, unlicensed, and uncoordinated UWB devices to use the cellular and PCS bands, from which they were previously barred. It has failed to explain how this is not a significant change in the nature or degree of exclusivity to which cellular and PCS licensees were entitled. Permitting such use is directly contrary to what the Commission told the Supreme Court was its obligation to “*protect [the PCS licensee’s] exclusive right to the spectrum and refrain from authorizing others to use that spectrum.*”⁷⁵

In the end, the exclusivity to which cellular and PCS licensees are entitled is that which existed under the rules that have now been amended. While Part 15 allowed highly restricted use of these bands by narrowband transmitters under low power limits, the bands were not particularly useful for unlicensed operations. Intensive usage by licensees would interfere with, if not preclude, secondary low-powered narrowband applications and would also be difficult to protect from interference. As a result, Part 15 usage was a largely theoretical incursion into licensee exclusivity, and it is one that the incumbent licensees have accepted. UWB changes all that. UWB will result in heavy usage of these bands by Part 15 devices that cannot be tracked or traced and, according to the record, will cause harmful interference.

As a result, the change in Part 15 to permit UWB on these bands is a significant reduction of the licensee exclusivity rights to which the incumbent licensees are entitled, and thus a modification of their licenses in violation of 47 U.S.C. § 316. In addition, for those licensees who obtained licenses at auction, the change in rules is a violation of the auction contract, as Sprint previously argued. Accordingly, the Commission should reconsider its determination that cellu-

⁷⁵ FCC Brief, *FCC v. NextWave*, Case No. 01-653, at n.10 (U.S., filed May 6, 2002) (emphasis added).

lar and PCS licenses are not exclusive and that their rights have not been modified by the amendment to Part 15.

IV. THE NEW RULES UNDERMINE THE PUBLIC INTEREST BECAUSE UWB DEPLOYMENT WILL JEOPARDIZE E911 SYSTEMS

In addition to the legal deficiencies that support reconsideration of the *Order*, there is a major public policy reason why UWB devices should not be authorized until testing definitively establishes that the deployment of these devices will not interfere with cellular and PCS operations. Cellular and PCS phones are used as emergency communications to place critical E911 calls. The Commission recognized the importance of these calls when it required most CMRS carriers to implement technologies capable of locating wireless E911 callers in a precise manner.⁷⁶

CMRS carriers generally utilize two types of technologies for providing E911 services: assisted GPS (“A-GPS”) or a technology that determines location based on signal strengths received either by base stations or handsets. The Part 15 amendments adopted by the Commission jeopardize both types of technologies.

Carriers generally do not use GPS to satisfy the Commission’s E911 requirements because of problems associated with in-building calls. Instead, carriers use A-GPS which combines GPS measurements with measurements obtained by CMRS transmissions. Accordingly, the steps taken by the Commission to protect the GPS band from UWB interference⁷⁷ do not preserve the viability of A-GPS. A UWB device may interfere with the provision of E911 information via A-GPS in two ways, either by: (1) producing sufficient interference to prevent the

⁷⁶ See *Revision of the Commission’s Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, CC Docket No. 94-102, *Report and Order*, 11 FCC Rcd 18676 (1996).

⁷⁷ See *Order* at ¶191.

placement of an E911 call altogether (*e.g.*, a call placed from indoors), or (2) producing lower interference levels that would permit the placement of an E911 call but reduce or eliminate the accuracy associated with A-GPS.

Similarly, UWB devices could completely undermine E911 technologies that rely on CMRS signal strengths to locate callers. If interference from a UWB device alters the signal strength received by a base station or handset, the algorithms used to determine the location of an E911 caller may not work properly. At a minimum, as demonstrated by Motorola and Sprint, the deployment of UWB devices may preclude the completion of E911 calls in marginal service areas. Such a result is contrary to the public interest and supports reconsideration.

V. IN AUTHORIZING UWB IMAGING SYSTEMS, THE COMMISSION ARBITRARILY FAILED TO ADDRESS INTERFERENCE CONCERNS RAISED BY CINGULAR AND REQUIRED COORDINATION THAT PROTECTS ONLY GOVERNMENT SYSTEMS BUT PROVIDES NO PROTECTION TO NON-GOVERNMENT LICENSEES

In Section IV.C.1 of the *Order*, the Commission authorized three classes of imaging systems — low-frequency, high-frequency, and mid-frequency. The imaging systems at issue include ground-penetrating radars, whose energy is directed earthward, as well as wall-, through-wall-, and medical-imaging systems, whose energy may be directed in directions more likely to cause interference to cellular and PCS operations. The *Order* is deficient because it failed to address specific concerns about the interference potential of these devices to CMRS. It also subjected imaging systems to a coordination process that provides protection (of a limited nature) only to government systems but provides no protection to non-government licensees.

The *Order* acknowledged that Cingular (then named Alloy LLC) had raised concerns about the CMRS interference potential of through-wall imaging devices, which could be aimed

at CMRS antennas.⁷⁸ These devices cause signals to travel beyond their target, because only a portion of the energy is reflected back. As a result, a highly directional signal could be beamed at a CMRS receive antenna, either directly or via multipath. Accordingly, Cingular urged the Commission to permit through-wall imaging applications, in particular, only in “very high frequencies, possibly even in the 60 GHz Oxygen Absorption Band, to minimize the potential for interference.”⁷⁹ Cingular also urged that *all* imaging operations, “with the possible exception of the GPRs, operation should be restricted to the bands above 2.7 GHz due to their potential impact on cellular, PCS and other terrestrial wireless systems.”⁸⁰ Cingular also supported the Commission’s proposal that through-wall imaging devices be limited to operation in contact or direct proximity to a wall’s surface, to minimize the opportunity for interference.⁸¹ Cingular cited Sprint’s joint testing with TDC as the basis for its concern about interference.⁸²

The Commission failed to provide a reasoned discussion of its apparent disagreement with Cingular. For example, it decided not to require a wall-contact switch or automatic power control for imaging devices. Yet, without explanation, it simply agreed with some commenters that “there is no need” for such protections.⁸³

The Commission acknowledged that there was a need for “an abundance of caution to protect the GPS and PCS services” and said it was therefore “requiring coordination before the device is used,”⁸⁴ but (as discussed below) the coordination procedure provides no protection to

⁷⁸ *Order* at ¶ 45 & n.102 (*citing* Alloy LLC Reply Comments at 14-16).

⁷⁹ Alloy LLC Reply Comments at 16.

⁸⁰ *Id.*

⁸¹ *Id.* at 15-16.

⁸² *Id.* at 15 & n.20 (*quoting* Sprint Supplemental Comments at 3-4 (Oct. 6, 2000)).

⁸³ *Order* at ¶ 57.

⁸⁴ *Id.* at ¶ 56.

PCS — or cellular, which the Commission did not even mention. Imaging devices were not limited to higher frequency bands, but instead they are permitted to operate in the bands used by cellular and PCS. As discussed above, the Commission’s interference analysis was arbitrary.

The coordination procedure that the Commission adopted protects only government operations, not licensed cellular, PCS, and other non-government operations. The *Order* says that imaging system operators must “complete a coordination procedure with the Government,” or “Government coordination.”⁸⁵ The rule concerning coordination, § 15.525, involves notification of the FCC, which will forward the information to NTIA for coordination with government entities.⁸⁶ Moreover, the coordination information that must be filed apparently does not include specific locations and orientations of operations, but only “operational areas.”⁸⁷ FCC officials have indicated that this will involve “blanket” coordination covering large geographic areas.

As a result, cellular and PCS operators will receive no notification of UWB imaging in their areas, and if they search the Commission’s files they will find only the broad areas where UWB imaging may be in use. If every construction company, safety agency, and medical laboratory in a metropolitan area files a coordination notice with the FCC that covers the entire area, a CMRS operator will learn nothing useful from a search of the coordination files. This will make it impossible for cellular and PCS operators to track interference to its source, should it occur. As Cingular stated in its reply comments:

[T]he very nature of UWB devices requires that a coordination process be in place before any deployment of UWB systems is allowed. Licensed users of the spectrum — and other users of UWB technology — need to be able to determine who is using UWB de-

⁸⁵ *Order* at ¶ 51, 53, 55.

⁸⁶ *See* 47 C.F.R. § 15.525, as adopted in the *Order*.

⁸⁷ *See* § 15.525(b).

vices, as well as where they are using them, in order to avoid causing interference and to provide a tracking mechanism in the event interference occurs. This is true whether the technology is used pursuant to a license or is used on an unlicensed basis. In the absence of coordination, a licensee or a customer encountering interference that results from another's UWB usage would be unable to track it to its source. A cellular licensee or GPS user that finds its service has become less reliable would not be able to determine who is using UWB in the vicinity and would not be able to tie the interference to a specific UWB user, much less to the technology.⁸⁸

Again, in response to an NTIA filing, Cingular emphasized the need for coordination:

The very nature of UWB devices requires a coordination process before deployment — conventional licensees and other users of UWB technology need to be able to determine who is using UWB devices, and where, to avoid causing interference and tracking any interference that occurs.⁸⁹

Despite Cingular's repeated showing of a need for direct, site-by-site coordination with cellular and PCS users, the Commission provided these licensees with *no* coordination rights, and the data that they can obtain from the Commission's government coordination files will be essentially useless. There is no discussion in the *Order* explaining the rationale for this arbitrary refusal to afford non-government licensees the tools needed to remedy or prevent interference.

CONCLUSION

The Commission should reconsider its decision to amend Part 15 because it lacks concrete evidence that cellular and PCS licensees would be absolutely protected from interference associated with the deployment of UWB devices. It was arbitrary and capricious for the Commission to conclude that UWB operation would be interference-free because its decision was premised on a Staff Report that noted the record lacked evidence regarding actual PCS signal levels, yet concluded:

⁸⁸ Alloy LLC Reply Comments at 8-9.

⁸⁹ Response of Cingular Wireless LLC to NTIA Reports at 3 (Feb. 23, 2000).

An interference analysis for a communications system needs to be based on a signal to noise ratio using the signal levels actually employed by that system.

Absent an interference analysis, it is legal error to authorize the deployment of UWB devices on spectrum exclusively assigned to cellular and PCS licensees. Finally, the Commission should prohibit the deployment of UWB devices that produce emissions on cellular and PCS frequencies until concrete evidence is available that these devices will not interfere with vital E911 services provided by CMRS carriers.

Respectfully submitted,

CINGULAR WIRELESS LLC

By: /s/ David G. Richards .

J. R. Carbonell
Carol L. Tacker
David G. Richards
5565 Glenridge Connector
Suite 1700
Atlanta, GA 30342
(404) 236-5543

Its Attorneys

June 17, 2002